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Section II (Remarks)

Indicated Allowability of Claims 5-7 and 11

The indicated allowability of claims 5-7 and 11 at page 3 of the Office Action ("Claims 5-7 and 11 are considered allowable over the prior art of record") is acknowledged.

Amendment of Claims 1, 13 and 25

Claim 1 has been amended herein to further specify the subject matter thereof as regards the removable sealing lid and valved output passage.

Specifically, claim 1 as amended recites, *inter alia*, "said lid having a single outlet port therein for flow out of the closed vessel of vapor deriving from said vapor source material" and the valved outlet passage being "communicatively connected to the single outlet port of the removable sealing lid...".

Such recitals are fully consistent with and supported by the originally filed disclosure of the application, including the disclosure at page 7, lines 23-25; page 10, lines 21-29; and Fig. 1 of the application.

In addition, claim 1 has been amended to recite "wherein said vaporizer has no internal moving or rotating surfaces," consistent with the description at page 4, lines 21-22 of the application.

Claim 25 has been correspondingly amended.

In connection with the amendment of claim 1, claim 13 has been amended herein to recite the vaporizer as "holding a source material containing at least one of boron, gallium, indium, antimony, phosphorus, arsenic, lithium, sodium and fluorine." Such recital is consistent with the disclosure at page 9, lines 7-9 of the application.

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Accordingly, no new matter (35 USC 132) has been introduced by such amendment of claims 1, 13 and 25.

Rejection of Claims Under 35 USC §103, and Traversal Thereof

In the December 20, 2006 Office Action, the examiner rejected claims 1-4, 8-10, 12, 13, 14 and 25-28 as being unpatentable over Stall (5,336,324) or Nagashima (6,473,564), either one taken in view of Mori (JP 04-228562) and Barr (2,447,789).

Such rejection is traversed, and reconsideration is requested of the patentability of the claims as amended herein, in light of the ensuing remarks.

Patentable Distinction of Claims 1-4, 8-10, 12-14 and 25-28

The rejection of claims 1-4, 8-10, 12-14 and 25-28 has been based on the following statement at pages 2 and 3 of the December 20, 2006 Office Action:

"Stall (see Figs. 14b and 17a, for example) and Nagashima (see Fig. 3, for example) each discloses a vaporizer comprising a vaporizer chamber having an interior space for accumulation of vapor, a heating device for applying heat to the vaporizer chamber, a removable sealing lid positioned on the vaporizer container, and a valved outlet positioned in the sealing lid.... The vaporizer chambers of stall and Nagashima don't have a block with wells as presently claimed. Mori (see abstract and Fig. 1) and Barr (see Figs. 1 and 2, for example) also discloses vaporizers comprising a vaporizer chamber having an interior space for accumulation of vapor and a heating device for applying heat to the vaporizer chamber. For ease of vaporizer chamber in particular includes a sealing lid having an opening, wherein the sealing lid forms of vapor accumulation space as and stall and Nagashima. Also, the vaporizer of Mori and Barr is a PVD effusion cell for vacuum evaporation. Mori and Barr teach that material can be vaporized more efficiently by providing the vaporizer chamber in the form of a thermally conductive block having wells. The material to be vaporized is placed in the wells. Mori and Barr teach that this arrangement increases the surface area of thermal contact between the interior surface of the heated vaporizer chamber and the material to be vaporized, and therefore heats and vaporizes material for efficiently. It would have been obvious to one skilled in the art to modify the vaporizer container of Stall or Nagashima by providing it in the form of a block having wells because Mori and Barr teach that this arrangement heats and vaporizes more efficiently."

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The examiner's rejection is composite in character, the claims having been rejected as "unpatentable over Stall... or Nagashima..., either one taken in view of Mori... and Barr" (page 2, lines 9-10 of the December 20, 2006 Office Action).

Taking first the rejection based on "Stall... in view of Mori... and Barr," the statement of rejection has cited Figs. 14b and 17a of Stall as disclosing a vaporizer that is to be modified to include a block with multiple wells as taught by Mori or Barr.

The vaporizer of Fig. 14b of Stall is reproduced below for ease of discussion.

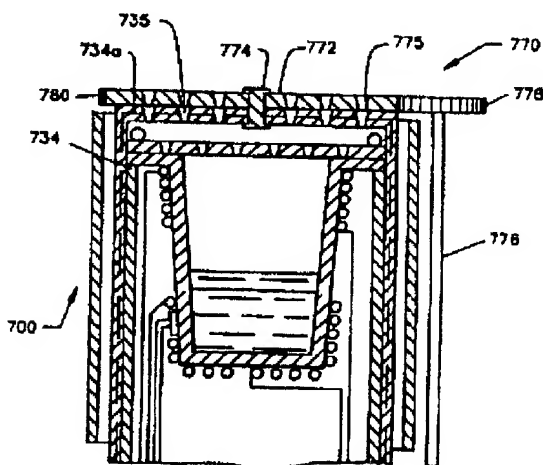
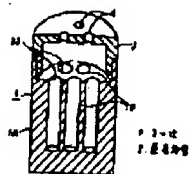


FIG. 14b of Stall

This vaporizer includes a crucible holding a source material and circumscribed at its upper and lower ends with heater elements. The crucible at its upper end has an outwardly extending flange that is coupled to a diffuser plate "having a plurality of apertures... which permit the source vapor to pass therethrough" as disclosed in Stall at column 24, lines 41-43. This is the vaporizer that the examiner has proposed to modify according to Mori or Barr.

The Mori vaporizer is shown below in a sectional perspective view of the vaporizer,

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Mori vaporizer

showing the lid of the vaporizer to have multiple holes 4 therein. If the examiner's hypothetical modification of Stall were made ("[I]t would be obvious to one skilled in the art to modify the vaporizer container of Stall or Nagashima by providing it in the form of a block having walls because Mori and Barr teach that this arrangement heats and vaporizes more efficiently"), the resulting crucible would have multiple wells, but it would be overlaid by a cover having multiple vapor release openings therein, consistent with the multi-holed cover of the Mori vaporizer.

In this respect, it is pointed out that Barr likewise fails to teach or suggest a "lid having a single outlet port therein for flow out of the closed vessel of vapor deriving from said vapor source material" and "a valved outlet passage communicatively connected to the single outlet port of the removable sealing lid," as required by amended claims 1 and 25, since Barr discloses an imperforate cover plate that is supported on an interior lip of the crucible by stud elements 22 to provide a circumscribing gap between the cover plate and the lip, for egress of vapor. See the drawings of Barr and reproduced below, showing the imperforate cover plate 15 and plug-like stud elements 20.

FIG. 1

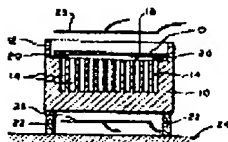
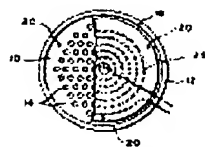


FIG. 2

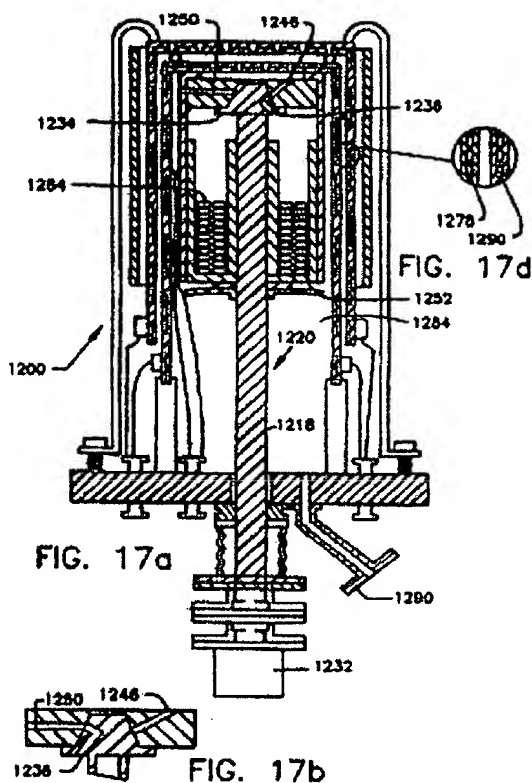


Barr, Figs. 1 and 2

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The modified Stall crucible produced by modification of Stall Fig. 14b in view of Mori and Barr thus would lack a "lid having a single outlet port therein for flow out of the closed vessel of vapor deriving from said vapor source material," as required by amended claims 1 and 25, and claims dependent thereunder (claims 2-4, 8-10, 12-14 and 26-28).

In the December 20, 2006 Office Action, the examiner also has cited Stall Fig. 17a for relevant teaching of a crucible that is proposed to be modified in view of Mori and Barr. Stall Fig. 17a is reproduced below for ease of reference.



The crucible of Fig. 17a of Stall is described at column 34, lines 11-64, as including a rotatable shaft 1218 coupled to a stepper motor 1232 so that in a "run" mode, the stepper motor will rotate the shaft 1218 to align respective bores 1236 and 1246 associated with the valve 1234 and the valve seat plate, respectively.

It therefore is evident that the crucible apparatus of Stall Fig. 17a contains moving parts including the shaft 1218, the valve 1234 and the stepper motor 1232. Even if the crucible 1252

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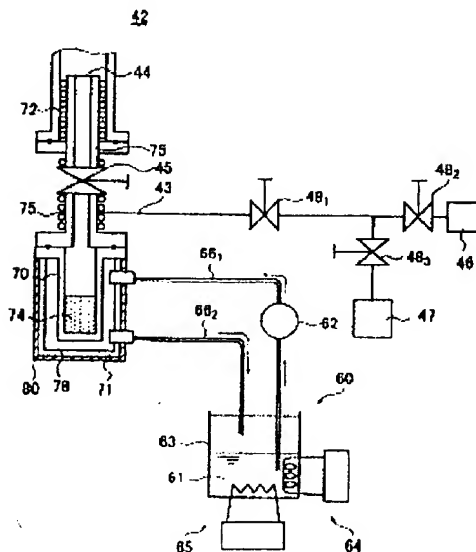
were to be modified to be in the form of a block having wells "because Mori and Barr teach that this arrangement heats and vaporizes more efficiently" (December 20, 2006 Office Action, page 3, lines 5-6), the resulting apparatus would still include moving parts, consistent with the fundamental teachings of Stall relevant to such apparatus of Fig. 17a.

Applicants' independent claim 1 requires that "said vaporizer has no internal moving or rotating surfaces." Claim 25 contains corresponding recital. All remaining claims 2-4, 8-10, 12-14 and 26-28 are of dependent form under such independent claims.

It therefore is apparent that the modification of Stall Fig. 17a as proposed in the Office Action fails to yield a vaporizer as required by applicants' claims 1-4, 8-10, 12-14 and 25-28.

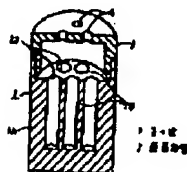
Accordingly, claims 1-4, 8-10, 12 and 14 and 25-28 are fully patentably demarcated over Stall in view of Mori and Barr.

Taking next the rejection based on "Nagashima in view of Mori... and Barr," Nagashima discloses a casing 71 including a heating medium circulatory path 78 around a container 70 holding a thin organic film material 74 as a source for vapor to form a thin organic film. Fig. 3 of Nagashima is reproduced below.



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If the examiner's hypothetical modification of the vapor deposition apparatus of Nagashima were made according to Mori, the resulting source material container would have multiple wells, consistent with the structure of the Mori vaporizer, shown below in sectional perspective view,



(Mori vaporizer)

but it would still be overlaid by a cover having multiple vapor release openings therein, consistent with the multi-holed cover of the Mori vaporizer.

Alternatively, if the Nagashima vapor deposition apparatus were to be modified according to Barr, the resulting source material container would have multiple wells, consistent with the structure of the Barr vaporizer, but it would still be overlaid by an imperforate cover plate 15, consistent with the structure of the Barr vaporizer¹, whose structure is shown in the drawings reproduced below.

FIG. 1

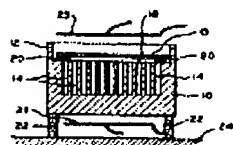
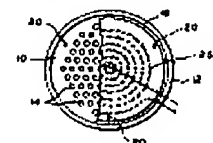


FIG. 2



Barr, Figs. 1 and 2

¹ As discussed previously herein, Barr discloses an imperforate cover plate that is supported on an interior lip of the crucible by plug-like stud elements 22 to provide a circumscribing gap between the cover plate and the lip, for egress of vapor.

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The resulting structure of Nagashima modified in view of Mori and Barr would therefore lack a "lid having a single outlet port therein for flow out of the closed vessel of vapor deriving from said vapor source material" and "a valved outlet passage communicatively connected to the single outlet port of the removable sealing lid," as required by amended claims 1 and 25, and claims 2-4, 8-10, 12-14 and 26-28 dependent thereunder.

Further patentable distinction of the applicants' claims is present in the recital in applicants' claims 1 and 25 that "the internal volume of said multiplicity of said wells is from about 1/3 to about 1/2 of the interior volume" of the vaporizer.

In contrast to this ~33% to ~50% well volume of a the overall interior volume of the vaporizer required in applicants' claimed vaporizer, the Barr vaporizer, based on dimensions disclosed in such reference for the diameter and depth of the wells, the height of the plug-like stud elements, gap dimensions at the periphery of the imperforate plate, and dimensions of the overall crucible, the wells in the Barr crucible are calculated to occupy over 98% of the interior volume of the crucible.

Concerning such volumetric allocation of the interior volume of the vaporizer, the application at page 8, lines 8-28 discloses that:

"The internal volume of the conductive block is bifurcated into the interior void space and elongated wells, and preferably the internal volume of the wells is about 1/3 to about 1/2 of the internal volume of the conductive block....

The elongated wells are spaced sufficiently apart in the conductive block to provide an adequate amount of conductive material between the sidewalls of the wells to ensure uniform heating in all the elongated wells....

The multiplicity of elongated wells dramatically increases the surface area for contact with the source material, and therefore more source material is vaporized per unit time....

Equally important is the reduction (related to vaporizers of the prior art) of "cold spots" in the vaporizer because the entire interior volume of the vaporizer is heated simultaneously."

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The foregoing advantages are associated with the specific allocation of well volume in the internal volume of the vaporizer of applicants' claimed invention.

The cited references are devoid of any teaching or suggestion of such internal volume allocation in the vaporization apparatus disclosed in such references.

For all of the foregoing reasons, claims 1-4, 8-10, 12-14 and 25-28 are submitted to be fully patentably distinguished over the art and in form and condition for allowance, together with the previously allowed claims 5-7 and 11.

Petition Under 37 CFR 1.136 for One Month Extension of Time for Response

Petition hereby is made under the provisions of 37 CFR 1.136 for a one-month extension of time for reply to the December 20, 2006 Office Action in this application. Such extension of time establishes April 20, 2007 as the deadline for reply to the Office Action.

Payment of the extension fee of \$120.00 specified in 37 C.F.R. § 1.17(a)(1) is authorized by the enclosed Credit Card Payment Form PTO-2038. Should any additional fees be required or an overpayment of fees made, please debit or credit Deposit Account No. 08-3284 of Intellectual Property/Technology Law, as necessary.

CONCLUSION

Based on the foregoing, all of Applicants' pending claims 1-14 and 25-28 are patentably distinguished over the art, and are in form and condition for allowance. Rejoinder and allowance of withdrawn claims 15-24 is likewise requested.

The Examiner is requested to favorably consider the foregoing and to responsively issue a Notice of Allowance.

If any issues require further resolution, the examiner is requested to contact the undersigned attorney at (919) 419-9350 to discuss same.

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Respectfully submitted,



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